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SOME GENERA AND SPECIES OF RAFINESQUE

M. L. FERNALD

CONSTANTINE SAMUEL RAFINESQUE [SCHMALTZ], the most erratic student of the higher plants, has made unending trouble for American and (although they apparently do not realize it) European botanists. Much of his work (like his segregation of *Carex* into many genera, often with the same species as types of different genera) was obviously the product of an abnormal mind; much of it is too obscure for clarification; but some of his books, for instance his extensive *Autikon Botanikon*,¹ contain accurate descriptions of genera and species which it is a duty to maintain. The task of sifting the comparatively few perfectly sound grains from the chaff and the distorted or unrecognizable grains is a thankless one and, above all, it should be undertaken only by those with intimate knowledge of the floras concerned. In any other hands the interpretation of Rafinesque might often lead to confusion and the perpetuation of doubtful names.

I should have, consequently, the gravest misgivings if assigned the unwelcome task of interpreting much of Rafinesque's publication. A few cases, however, have recently come to my attention in which the current names of familiar plants are necessarily altered by the valid and quite clear publication of Rafinesque. These are discussed below.

TRILLIUM **Gleasoni**, nom. nov. *T. declinatum* (Gray) Gleason, Bull. Torr. Bot. Cl. xxxiii. 389 (1906), not Rafinesque, *Autikon Botanikon*, 135 (1840). *T. erectum* var. *declinatum* Gray, Man. ed. 5: 523 (1878).

¹ This, one of the most significant works of Rafinesque, with "Botanical illustrations [*i. e.* diagnoses] of 2500 New . . . Plants," published in 1840, has unfortunately, not yet been admitted to *Index Kewensis*; consequently, many names now current are upset by its well published genera and species.

Rafinesque's *Trillium declinatum* was from Alabama and Florida, a plant with oblong or elliptical leaves said by its author to be near *T. Catesbaei* Ell. It is very different from *T. declinatum* of Gleason, a northern plant with broadly rhombic leaves. Since the name *T. declinatum* is preoccupied by the southern plant it is a pleasure to associate with the broad-leaved northern species the name of the botanist whose study established its specific value.

LYCHNIS (§ MELANDRIUM) **furcata** (Raf.), comb. nov. *Silene* (*Viscago*) *furcata* Raf. Autikon Botanikon, 28 (1840). *L. affinis* J. Vahl, in Fries, Mantissa, iii. 36 (1842) as to Greenland reference only, not the Finmark plant described. *Melandrium affine* J. Vahl in Fl. Dan. xiv. fasc. xl. 5, obs. sub t. mmccclvi. (1843).

Lychnis furcata is the very characteristic plant of Greenland, Arctic America and northern Labrador and perhaps of Spitzbergen which has been passing as *L. affinis* J. Vahl in Fries, Mantissa, iii. 36 (1842) or *Melandrium affine* J. Vahl in Fl. Dan. xiv. fasc. xl. 5, obs. sub t. mmccclvi. (1843) or *Wahlenbergella affinis* (J. Vahl) Fries, Bot. Not. (1843) 143. Rafinesque's specific name should be taken up not only because it antedates *L. affinis* by two years but because it belongs to an apparently quite distinct and more arctic species than the Lapland plant which should stand as true *L. affinis*. To be sure, Ostenfeld urged the taking up for these plants of the still earlier name *L. pauciflora* Ledeb. Mém. Acad. Imp. Sc. St. Petersb. v. 537 (1815) and published the combination *Melandrium pauciflorum* (Ledeb.) Ostenf. Meddel. om Grønland, lxx. 173 (1923); but Hultén definitely shows¹ that Ledebour's *L. pauciflora* was a mixture, the type-sheet preserved in Herb. Hort. Petrop. consisting partly of the circumpolar *L. apetala* L. (1753), partly of the Asiatic *L. brachypetala* Hornem. (1819), and he rightly refrains from using the Ledebour name, since Ledebour's description was based on a mixture of two species (*nomen confusum*).

It has been customary to regard as one species, *Lychnis affinis*, the plants of the arctic and subarctic areas and to give the entire series the name *Lychnis affinis* or *Melandrium affine*, an interpretation reflected in the broad range given by Hultén, whose detailed statements of distribution are so unusually complete:

"Geographical area: Europe: very rare in northern Scandinavia and on Kola; Spitzbergen, Nova Zembla, Arctic Russia, in the Urals at least to Sob river (!). Asia: from Jalma and the mouth of Yenisei (!)

¹ Hultén, Fl. Kamtch. ii. 91 (1928).

to the mouth of Lena (!) and Chukch Penins., southwards to Vilju distr., Jakutsk distr. and southern Kamtchatka. Also in the mts. of Central Asia southwards to Pamir and Himalaya. America: Arctic Alaska to Ellesmereland, Baffin Land, Hudson Bay and Labrador, southwards to Alberta acc. to RYDBERG. W. Greenland from about 66° N. lat. northwards, E. Greenland from Scoresby Sound northwards.”¹

Lychnis affinis was originally described by Fries from Finmark, his very detailed description applying primarily (if not entirely) to the Lapland plant and his citation of specimens covering the Lapland (Finmark) plant only: “Ad Alten Finmarkiae occidentalis locis graminosis herbidis. *Laestadius*, Vahl,² Blytt.” Unfortunately, however, Fries gave two manuscript names in synonymy:

“*Lychnis affinis*. J. Vahl! Fl. Gr. Mscr.

L. Dorothea. *Laestad.*!”

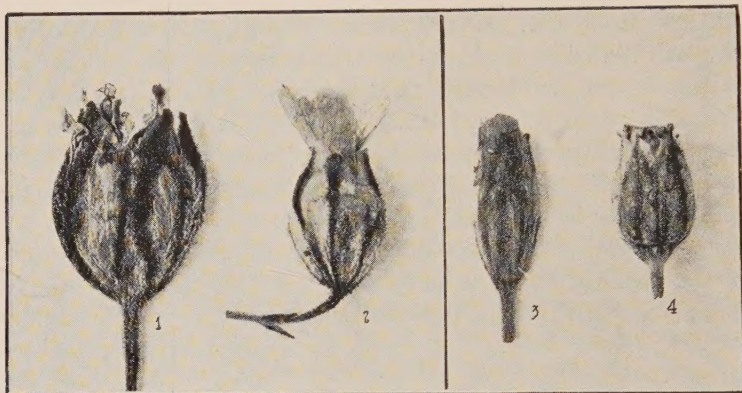
It is evident that Fries, describing and citing only the Finmark plant from material collected there by *Laestadius*, M. Vahl and Blytt, rejected the unpublished name which *Laestadius* had assigned it and, unhappily, took up for the Finmark plant a manuscript name which J. Vahl was applying to the quite different plant of Greenland, a plant which J. Vahl formally published the next year as *Melandrium affine*. The Lapland plant should, therefore, be called *L. affinis* of Fries, not of “(J. Vahl) Fries,” since Fries’s ascribing of it to J. Vahl was due to his misidentification of the Greenland plant of J. Vahl.

The distinctive characters of the two plants are given below and the quite different calices and the seeds are well brought out in the figures: FIG. 1 a characteristic fruiting calyx of *L. furcata* from Labrador (*Woodworth*, no. 219½), FIG. 2, a flowering calyx from Greenland (*Godhaven*, *Porsild*), FIG. 3 a flowering calyx of *L. affinis* from Torne Lappmark (*Alm*), FIG. 4 a fruiting calyx from Torne Lappmark (*Samuelsson & Zander*), FIG. 5 seeds of the latter, FIG. 6 seeds of *L. furcata* from Greenland (*Porsild*); the calices $\times 1\frac{3}{4}$, the seeds $\times 10$.

L. FURCATA. Surfaces of upper (and commonly the lower) leaves more or less pubescent: flowering calyx inflated, ellipsoid-campanulate, 5–10 mm. in diameter; fruiting calyx urceolate or gibbous-campanulate, 10–15 mm. long, up to 12 mm. thick, the lobes deltoid to semi-orbicular; veins dark-purple, the principal ones oblanceolate or spatulate, 1–2 mm. broad above the middle; intermediate veins

¹ Hultén, l.c. ii. 92 (1928).

² Martin Vahl, not the younger J. Vahl.



Figs. 1 and 2, Calices of *LYCHNIS FURCATA*, $\times 1\frac{3}{4}$; figs. 3 and 4, of *L. AFFINIS*, $\times 1\frac{3}{4}$. (Photos. by H. M. Raup.)

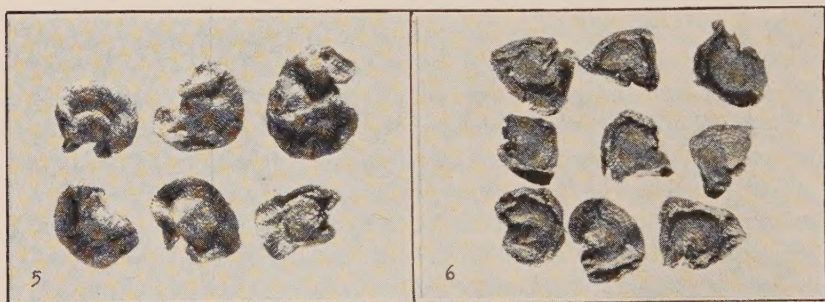


FIG. 5, Seeds of *LYCHNIS AFFINIS*, $\times 10$; fig. 6, of *L. FURCATA*, $\times 10$. (Photos. by H. M. Raup.)

coarse, oblanceolate, simple or rarely forking at tip: petals with a pair of oblong appendages: capsules 10–15 mm. long; the tips of the valves (before splitting) 2–4 mm. long: wing mostly narrower than the body of the seed.—Greenland, Arctic America and northern Labrador; ?Spitzbergen.

L. AFFINIS. Surfaces of upper leaves glabrous or essentially so: flowering calyx slenderly ellipsoid-cylindric, 3–6 mm. in diameter; fruiting calyx 10–12 mm. long, 5–7 mm. thick, the lobes oblong-ovate; veins green or purple, the principal ones linear to linear-ob lanceolate, mostly only 0.2–0.5 mm. broad, rarely 1 mm. broad at summit; intermediate veins delicate, linear-filiform, often forking from near the middle: petals of pistillate flowers unappendaged: capsules 9–11 mm. long; the tips of the valves (before splitting) 1–3 mm. long: wing mostly as broad as or broader than the body of the seed.—Arctic Europe.

All material which I have seen from Greenland, Labrador and arctic America forms a consistent species apparently quite distinct from the plant of Finmark and Torne Lappmark. The Spitzbergen material before me is not in satisfactory condition but it seems to be *L. furcata*. I have seen no good specimens from Nova Zembla, arctic Russia and Asia and am, therefore, unable to say whether they belong with *L. furcata* or *L. affinis* or connect the two. Some of the specimens from northwestern America, especially from Yukon and Alaska, are not satisfactorily placed in the two species as here defined, and fuller collections are needed from that area before they can be properly worked out.

Rafinesque's description was as follows:

238, *SILENE* (*Viscago*) *furcata* Raf. pubescens, caule bifloro vel furcato, ramis unifl. fol. cuneatis acutis, superis lanceol. remotis paucis, cal. brevis teretis, dentib. latis, petalis brevis angustis bifidis—Labrador and Hudson Bay, remarkably like the last plant [*Physocarpus vespertinum* Raf., based on *Lychnis vespertina* Sibth.], but a real *Silene* not dioical and with 3 styles, smaller 4 to 6 inches high, calyx and petals shorter, incarnate.

The plant of Labrador, Arctic America and Greenland is 0.5–3 dm. high, with simple or forking stems and 1–9 flowers, with calyx and petals very suggestive of those of *L. alba* Mill. (*L. vespertina*) but shorter; and the calyx strongly "incarnate," the petals white of roseate. It is obviously what Rafinesque was describing.

EUPHORBIA purpurea (Raf.), comb. nov. *Agaloma purpurea* Raf. Autikon Botanikon, 94 (1840). *E. nemoralis* Darl. Fl. Cestr. ed. 2: 518 (1837) not Salisb. Prodr. 390 (1796). *E. Darlingtonii* Gray, Man. 404 (1848).

Rafinesque's genus *Agaloma*, based on the white-flowered *Euphorbia corollata* L., was fully defined by him in *Flora Telluriana*, genus no. 1188, p. 116 (1838); and by those who see in it a genus the name *Agaloma*, with clear priority and validly published, should be used instead of *Tithymalopsis* Kl. & Garcke (1859) which was, likewise, based on *Euphorbia corollata*.

Rafinesque's description of *Agaloma purpurea* is unequivocal:

655, *AGALOMA* (Raf. fl. tell. 1188) *purpurea* Raf. glabra caule elato angul. striato fistuloso, fol. lanceol. acutis basi attenuatis subtus glaucis; fl. ad apice axil, pedunc. unifl. invol. 2 delt. subflos, caps. glabris—very remarkable sp. of this G. linking with last, 3 feet high, leaves 4 inches long one broad, flowers not white as in most species but purple rather small: Glades of Pennsylvania Alleg. Mts. very rare.†

Darlington's original description of his *Euphorbia nemoralis* is strikingly like Rafinesque's account of *Agaloma purpurea*, though more detailed:

Stem 2 to 3 feet high, . . . smooth. . . . *Leaves* 3 or 4 inches long, and about an inch wide, . . . lance-oblong, and oblanceolate-oblong, rather acute . . . more or less tapering towards the base, . . . the under surface pale, or subglaucous, . . . *Heads* of florets in a terminal umbel . . . and also lateral, on slender axillary branches . . . ; *bracts* . . . wider than long, broadly ovate . . . ; *petaloid segments* of the involucre . . . purplish-brown within; . . . *Capsule* . . . often becoming nearly smooth.

Hab. Moist woodlands: not very common.

PYROLA MINOR L.

Some botanists¹ separate *Pyrola minor* from the other *Pyrolas* as a genus *Erxlebenia* Opiz (1852). They have overlooked the earlier and valid name *BRAXILIA* Raf. Autikon Botanikon, 102 (1840). Rafinesque's diagnosis was clear:

BRAXILIA Raf. diff. *Pyrola*, cal. 5 part. petalis vix patens, stam. rectis brevis, stylo brevis recto, stigma 5 dent. & c.

Braxilia was launched with five Rafinesquian species: *B. parvifolia* (*Pyrola minor* L.), *B. media*, and three doubtful segregates from America.

PYROLA SECUNDA L.

Some botanists (not including myself) treat *Pyrola secunda* as a genus distinct from *Pyrola*. In doing so they² take up for the "genus" the name *Ramischia* Opiz (1852). There is an earlier and perfectly valid generic name in *ORTHILIA* Raf. Autikon Botanikon, 103 (1840). There can be absolutely no question about what Rafinesque intended:

ORTHILIA Raf. diff. *Pyrola*, cal. 5 dent. petalis campanulatis, stam. rectis, stylo elongato filif. recto, stig. 5 dent. caps 5 gona profunde umbilicata. *Caulib. ramosis, floribus racem. secundis*.

Rafinesque proposed three species, *O. parvifolia* Raf. (a renaming of European *Pyrola secunda*) and *O. procumbens* and *O. dentata*, variations of the plant in eastern North America.

SABATIA AMOENA (Raf.) G. Don, forma *albiflora* (Britton), comb. nov. *S. maritima* Raf. Med. Fl. 77 (1830). *S. stellaris* Pursh, forma *albiflora* Britton, Bull. Torr. Bot. Cl. xvii. 125 (1890).

Sabatia amoena (Raf.) G. Don, Gen. Syst. iv. 207 (1837) was based directly on *Chironia amoena* Raf. Desv. Journ. Bot. i. 224 (1809),³

¹ Rydb. N. Am. Fl. xxix¹. 28 (1914) *et al.*

² Rouy & Foucaud, Fl. France, iv. 16 (1897); Rydb. N. Am. Fl. xxix¹. 28 (1914) *et al.*

³ The title page of Desvaux's Journal de Botanique, tome 1, is dated 1808, but Rafinesque himself stated in Atlantic Journal, i. 207 ("Winter of 1833") in his *Cronological Index* of his own botanical writings, that the paper was "re-printed in Desvaux' Journal of Botany, Paris, 1809." Desvaux complicated the question by himself stating in a volume dated 1814 that "*Nous avons publié en 1810, deux Volumes de 384 pages chacun et de 12 gravures*" (see Fernald, RHODORA, xxix. 227 (1927)). Since Vol. 1 (dated 1808) is the only one of the two volumes with 384 pages and 12 plates (Vol. 2 having 384 and 13 plates), we have Desvaux's word that it did not come out until 1810.

which was the French translation of the original description in English previously published by Raf. Med. Repos. hex. ii. v. 359 (1808). It has been customary to refer *Chironia amoena*, consequently *Sabatia amoena*, to the synonymy of *S. gracilis* (Michx.) Salisb. (1806), based on *Chironia gracilis* Michx. (1803) or to that of *S. campanulata* (L.) Torr. (1824) based on *Chironia campanulata* L. (1753). But the whole matter has been sadly confused. *S. campanulata* is a perennial with numerous branches springing from a subligneous base and having erect or strongly ascending, naked or nearly naked peduncles, and flowers 2–3.5 cm. broad. It occurs on damp and fresh (acid) sandy and peaty soils of southern Massachusetts; from Monmouth County, New Jersey to Bucks County, Pennsylvania; and from the mountains of North and South Carolina and Tennessee southward to southern Georgia and southern Alabama. South of Monmouth County, New Jersey it is not a coastal plant. *S. gracilis*, like *S. campanulata*, is a perennial with subligneous rhizomes; but its branches are more divergent and leafy and terminated by rather smaller flowers (mostly 2–2.5, rarely –3 cm. broad). Its upper leaves and calyx-lobes are more slender than in *S. campanulata*. It seems to be a rather well defined species, occurring from eastern North Carolina to middle Georgia and northwestern Florida, west to Louisiana; but it may be better to treat it as a southern coastwise variety of *S. campanulata*. Whether it be considered a species or a variety, it seems to be unknown along the coast north of North Carolina.

Rafinesque's *Chironia amoena* was the sea-shore plant of Maryland, Delaware and New Jersey, *i. e.* *S. stellaris* Pursh, Fl. Am. Sept. 1. 137 (1814), an annual or biennial species with solitary stems and without a caudex. This plant is very characteristic of the sea-shore of these and adjacent states and there seems to be no reason why Rafinesque's description does not apply to it. To be sure, he states that the calyx is equal in length to the corolla, while Pursh says that it is "semibreviore," but as already pointed out by Bicknell this character is "unstable in a very marked degree,"¹ an observation which I promptly indorsed,² since the specimens show plenty of calyx-lobes equaling or even longer than the corolla-lobes. Bicknell and later I, in the same discussions, emphasized the acute, lanceolate leaves of *S. stellaris* as opposed to the obtuse and linear or linear-oblong leaves of *S. campanulata*.

¹ Bicknell, Bull. Torr. Bot. Cl. xlii, 31 (1913).

² Fernald, RHODORA, xviii, 145 (1916).

With these points in mind it will be seen that there is not much difference between the description of *S. stellaris* by Pursh and of *Chironia amoena* by Rafinesque.

Pursh's description read:

2. *S. erecta*; ramis dichotomis elongatis 1-floris, foliis *stellaris* lanceolatis acutis, calyce subulato corollae semi-breviore, laciniis corollae obovatis, caule tereti.

Icon. *Bartram ic. ined. t. 13, in Musaeo Banksiano.*

In salt marshes: New York, New Jersey, &c. ♂.

Aug. v. v. The flowers are large and a beautiful rose colour, with an elegant yellow star in the centre, which is surrounded by a deep red border; . . . It varies with white flowers.

Rafinesque's account, except for the point noted, was nearly the same:

6. *Chironea amoena*, graceful *chironia*; stem cylindrical, dichotomous, leaves narrow-lanceolate, acute, flowers terminal, calix equalling in length the corolla, which is wheeled; grows on the sea-shores of Maryland, Delaware, and Jersey; the flowers are rose-colour, with a double star in the centre, the interior one yellow, the exterior one red. A variety has white flowers, with the same star.

Somewhat later, Rafinesque described the white-flowered form as *Sabatia maritima* Raf. Med. Fl. 77 (1830).

A NOTE ON *SALIX DODGEANA*.—While making a study of the willows of Wyoming in the summer of 1930, the writer noticed a specimen of *Salix Dodgeana* in the Rocky Mountain Herbarium which varied somewhat from material from the type locality. On July 27, 1931, the writer visited the type locality, collecting many specimens of the plant. Comparison with these indicated the first-named specimen to represent a distinct form.

SALIX DODGEANA Rydb. Bull. N. Y. Bot. Gard., 1. 277 (1899); Ball in Coulter and Nelson, New Manual of Rocky Mountain Botany, 131-132 (1909); Rydberg, Flora of the Rocky Mountains and Adjacent Plains, 195 (1917); Schneider, Bot. Gaz. 28. 38, 54-55. (1919); Hawkins, Trees and Shrubs of Yellowstone Natl. Park, 62. (1924).—Wyoming, Montana. Specimens examined: MONTANA, type locality: Electric Peak, Yellowstone Natl. Park, alt. 10,000 feet, August 18, 1897, P. A. Rydberg, Ernst A. Bessey no. 3921, three sheets.

SALIX DODGEANA Rydb. forma **subrariflora**, f. nov. A forma typica differt foliis ovatis ad suborbicularibus;amentis feminis 3-pluris floris; stylo praesenti, minus quam 1 mm. longo.—WYOMING:

Sublette County, in the vicinity of Green River Lakes, moist slope, Sheep Mt., alt. 11,000 ft., August 1, 1925, *E. B.* and *L. B. Payson* no. 4505. (TYPE, Rocky Mountain Herbarium.)

Numerous specimens seen and collected at the type locality agree with the original description, having the pistillate aments 1-2-, occasionally 3-flowered, and the leaves oblong to ovate.—LEON KELSO, U. S. Biological Survey, Washington, D. C.

EUKRANIA AND CYNOXYLON NOT GENERA OF RAFINESQUE

OLIVER ATKINS FARWELL

SOME of our local manuals rate the Flowering Dogwood as a distinct genus under the name of *Cynoxylon*, attributing the name to Rafinesque; likewise the Dwarf Cornel under the name of *Cornella* or *Chamaepericlymenum*, rejecting *Eukrania* of Rafinesque. If they accept *Cynoxylon* Raf. as a generic name, they must, if they are consistent, accept *Eukrania* Raf. in the same sense and as Rafinesque used it, for the Dwarf Cornels. To be sure, Rafinesque referred to it the European *Cornus mascula* but the only sense in which he used it was for the Dwarf Cornel, hence it must be the type. In the Index Kewensis we find *Cynoxylon* and *Eukrania* listed as genera of Rafinesque and *C. florida*, *E. Canadensis*, *E. mascula*, *E. Suecica* and *E. cyananthes* all attributed to Rafinesque, the last in Alsog. Am. p. 63 and the others on p. 59. A perusal of Rafinesque's paper on *Cornus* in Alsographia shows that he only construed these names as subgenera of *Cornus* and that in no case did he make any combinations under either *Cynoxylon* or *Eukrania*. Rafinesque writes of them as "G. or subgenera" and again as "groups." He has on p. 58:—"254. CORNUS Raf." and as types "most of the American sp. also *C. sanguinea*, *alba*, *dichotoma* &c." This is equivalent to *Svida* Opiz. "255 Subg. MESOMERA Raf. . . . Types the sp. blended in *C. alternifolia*, see 274 to 278."; "256 Subg. KRANIOPSIS Raf. . . . Types *U. paniculata* and *comosa*, 279, 280." The *U.* is evidently a typographical error. On p. 59: "257 EUKRANIA Raf. . . .—Types *C. mascula*, *canadensis* and *suecica*. *Krania* and *Mesomora* were grecian names of the Cornels"; "258 CYNOXYLON Raf. . . . Type *C. florida*, distinguished since 1828."; "BENTHAMIA Lindl. non Rich. Raf. syl. tel. 817. . . .—Type *B. or Cornus fragifera* Wallich." "Having

thus distinguished these *groups* [italics mine], I shall mention all the true *Cornus*, . . .” From the above it will be seen that *Cynoxylon* and *Eukrania* are parallel categories and that if one is a genus so is the other; or if a subgenus, so is the other. The “C.” under each stands for *Cornus* and the species mentioned are the *Cornus* species referred to each group and cannot in any sense be construed as new combinations under each name respectively. Rafinesque made no combinations under either name, here or elsewhere, so far as I am able to determine. In the Medical Flora, Vol. 1, page 132 (1828) Rafinesque named and defined *Cornus*, section *Cynoxylon* for the Flowering Dogwood, *C. florida* Linn. This antedates and supersedes Section *Benthamidia* Spach. In Alsog. Am. p. 59, he raises it to subgeneric rank. That *Eukrania* is only a subgeneric name is proved by Rafinesque himself in this same paper (Alsog. Am.) where, on page 63, he lists and describes a species of *Cornus* as “281 *Cornus* (*Eukrania*) *cyananthes* Raf. atl. j. 151.” I think the evidence is quite emphatic enough that Rafinesque, himself, considered the names “*Cynoxylon*” and “*Eukrania*” as subgeneric only. Under the International Rules, the name *Eukrania* must be retained for the group having the larger number of species, hence I choose *Cornus Canadensis* Linn as its type. *Cynoxylon* and *Eukrania* as genera would start with the Index Kewensis; likewise the binomials under them; the author of the genera and the binomials is of course B. D. Jackson, Editor of the Index Kewensis. Even this would make *Eukrania* antedate either *Chamaepericlymenum* or *Cornella*. I am indebted to Mr. C. C. Deam of Bluffton, Ind., for a copy of Rafinesque’s paper on *Cornus* in the *Alsographia*.

DEPARTMENT OF BOTANY,
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DETROIT, MICH.

THE IDENTITY AND NOMENCLATURE OF APOCYNUM ANDROSAEMI-FOLIUM L.—During the course of a monograph¹ of the genus *Apocynum* published about two years ago, the writer subdivided the Linnaean *A. androsaemifolium* into two principal varieties, together with one other of local and minor importance. One of those varieties, indigenous to the northwestern United States and adjacent Canada from Nebraska and the Dakotas to British Columbia and northern Califor-

¹ Woodson, R. E., Jr. Ann. Mo. Bot. Gard. 17: 41-149. 1930.

nia, was interpreted as fulfilling the original description¹ of the species with regard to the glabry of the dorsal surface of the foliage, whereas the variety with the dorsal leaf-surface predominantly more or less pubescent, common to the northeastern States and adjacent Canada and to a less extent generally westward, was designated as coinciding with the requirements of A. de Candolle's var. *incanum*. This interpretation was the one previously made by the only revisors² of the genus, since the time of de Candolle, who had considered the eastern and the western plants as representing distinct varieties.

However, in spite of his diagnosis of the dorsal leaf-surface of the species as glabrous, Linnaeus stated that his plants had their habitat "in Virginia, Canada." Furthermore, according to Prof. M. L. Fernald, the specimen from the Hortus Cliffortianus preserved in the herbarium of the British Museum (Natural History) actually has the dorsal leaf-surface glabrous, and upon the foliage of a specimen of doubtful origin incorporated in the herbarium of Linnaeus at the Linnean Society of London the trichomes are perceptible only with the aid of a hand-lens. As a matter of fact "glabrous" was a relative term of not too great exactitude in the time of Linnaeus, and under the circumstances it is easy to see how the commonly pubescent eastern variety was so described.

In the light of the foregoing considerations it is undoubtedly necessary to restore the typical designation to the eastern plants, in which case var. *glabrum* Macoun, Cat. Can. Pl. 2: 317. 1884 is the correct name of the western variety.—R. E. WOODSON, Jr., Missouri Botanical Garden.

A FEW NOTEWORTHY PLANTS FROM SOUTHERN VERMONT

RICHARD J. EATON AND LUDLOW GRISCOM

ON September 4 and 5, 1931, the writers made two botanical trips, primarily for reconnaissance, to the valleys of the Connecticut River and its tributaries in southern Vermont and New Hampshire. No attempt was made to explore any one locality systematically or to collect a representative series of plants. Only such specimens were taken as appeared unusual or of personal interest. No mention

¹ L. Sp. Pl. ed. 1. 213. 1753.

² cf. Beguinot, A., & N. Belosersky R. Accad. Lincei Atti, Mem. Cl. Sci. Fis. V. 9: 670-671. 1913.

will be made at this time of plants collected on the New Hampshire side of the river.

With West Dover as a base, the routes followed included the valley of West River at Dummerston, and West Putney, and the valley of the Connecticut River at Westminster, Bellows Falls, Charlestown (N. H.), Claremont (N. H.), Ascutney and Weathersfield. The following briefly annotated list of the more noteworthy plants found is arranged for convenience in Manual order. An asterisk denotes a plant which apparently has not previously been reported from Vermont. Unless otherwise noted, specimens have been retained in the possession of the writers.

* *Panicum virgatum* L. var. *spissum* Linder. Meadow, Springfield, 4 September 1931. Plant forming a dense clump or stool.

In technical characters it is clearly this variety, but the panicle is open and lax as in typical *P. virgatum*, which incidentally has been reported only from three or four stations in Vermont.

Muhlenbergia tenuiflora (Willd.) B. S. P. Alluvial bank of West River, Dummerston, 4 September 1931.

No published account of the occurrence of this species in Vermont has been found. However, Mr. Dana S. Carpenter writes that it is "occasional" in the State. There are two specimens in the New England Botanical Club Herbarium as follows: West Haven, Rutland Co., *G. L. Kirk*, 17 August 1913; Brattleboro, Windham Co., *L. A. Wheeler*, 19 August 1915.

* *Eragrostis frankii* (F. M. & L.) Steud. Sandy bank of Connecticut River, Westminster, 4 September 1931.

A single vigorous plant was found of which a small portion has been deposited in the Herbarium of the New England Botanical Club.

Bromus ciliatus L. var. *intonsus* Fernald. Alluvial bank of West River, Dummerston, 5 September 1931.

This specimen differs from the type in possessing lemma and palea characters assigned to *B. Dudleyi* Fernald. See RHODORA 32: 63-68. Typical var. *intonsus* is the common representative of the group in this region.

Elymus virginicus L., forma **monanthos**, n. f. spiculis omnino unifloris, rachilla nuda 0.5 mm. longa post paleam prominente; glumis parte tertia superiore margine manifeste scabris.

Spikelets *single-flowered* throughout, with naked, short (.5 mm.) rachilla-stumps projecting behind the paleas; glumes, exclusive of their scabrous awns, distinctly scabrous on margins along outer

third of their length.—Edge of meadow, Springfield, 4 September 1931. TYPE placed in Herbarium of New England Botanical Club.

Further collections and study of herbarium material may require elevation of this form to varietal rank.

CYPERUS ARISTATUS Rottb. Sandy shore of Connecticut River, Ascutney, 4 September 1931. Frequent.

SANICULA TRIFOLIATA Bicknell. Rich pocket on rocky wooded hillside, Dummerston, 5 September 1931. Not common.

Duplicate specimen placed in Herbarium of New England Botanical Club.

GENTIANA ANDREWSII Griseb. Edge of thicket, West Putney, at altitude of 1200 feet, 4 September 1931.

A very scarce plant on the uplands of southern Vermont.

*SOLIDAGO BICOLOR L. \times S. NEMORALIS Ait. Dry upland field, West Putney, 4 September 1931.

An unusual hybrid, with white rays and yellow disk flowers. This plant shows the small axillary leafy fascicles of *S. nemoralis* and the regular thyrsoïd inflorescence of *S. bicolor*. In pubescence, and leaf outline, the plant is intermediate between the two. The assumed parents were abundant and in close proximity.

S. RUGOSA Mill. Gravel railroad embankment, Westminster, 4 September 1931. A gigantic specimen 2.5 + m. high, stem about 1 cm. thick at base. No specimen preserved.

ASTER DIVARICATUS L. var. **tenebrosus** (Burgess), comb. nov. *A. tenebrosus* Burgess in Britt. & Br., Ill. Fl. iii. 357, fig. 3736 (1898). Rich deciduous woods, West Dover, at altitude 1900 feet, 4 September 1931.

This specimen is conspicuously separable from typical *A. divaricatus* by its glabrate, dark green, long-acuminate leaves with relatively coarse teeth, and by its relatively firm broad obtuse bracts, green or rose-tipped, regularly imbricated to form a broad nearly hemispherical involucre, the innermost series not elongated or noticeably different in texture from the outer series.

In proposing this new combination, the authors consider the plant unworthy of specific recognition. On the other hand, they are strongly of the opinion that it deserves varietal rank as a well-marked extreme of the polymorphic *A. divaricatus* group, commonly replacing the species in the higher rich wooded hillsides of western New England, New York, and south to Virginia. Wiegand and Eames in their Flora of Cayuga Lake Basin state that this is the prevailing form of the species in central New York. When well developed var. *tene-*

brosus is recognizable at a glance in the field, but passes freely into typical *A. divaricatus*.

**A. GLOMERATUS* Bernh. Rich deciduous woods, valley of West River, Dummerston, 4 September 1931. Growing with *A. divaricatus* and *A. Schreberi*.

An indefinite and unsatisfactory species. Very few specimens are in the Gray Herbarium, which, like the present one, *possess all* the characters claimed for the species. Apparently it has never been collected except where the other two species occur together commonly.

**A. FOLIACEUS* Lindl. var. *SUBLINEARIS* Griscom & Eaton. Alluvial bank of Connecticut River, Weathersfield, 4 September 1931, *Eaton & Griscom*, no. 14754 (TYPE); Weathersfield, 4 September 1931, *Eaton & Griscom*. Bank of West River, Dummerston, 5 September 1931, *Eaton & Griscom*, no. 14758.

These specimens are cited here because they demonstrate the range of variation in leaf width and size of heads which may be expected in this variety. For a discussion of the New England representatives of *A. foliaceus*, see Griscom and Eaton in RHODORA (34: 13). For a brief description of the species and several varieties see Fernald: RHODORA, 17: 13.

NOTES FROM THE AMHERST COLLEGE HERBARIUM

ALFRED S. GOODALE

IN the List of Herbaria of New England compiled in 1901 by the late Mary A. Day, the Amherst College Herbarium was described as containing "about 12,000 species of which 2,000 sheets represent European species and the remaining 10,000 American; the latter exhibiting chiefly the flowering plants from that part of the United States east of the Mississippi River." (RHOD. 3: 68) During the thirty years elapsing since the publication of the above statement the size of this collection has increased to more than five times that previously recorded, and has so magnified its scope that it seems wise to give an account of its history and present status.

Apparently its nucleus was assembled by President Edward Hitchcock whose interest in botany was secondary only to his devotion to palaeontology. He was an enthusiastic collector and a critical observer of the plants occurring in Amherst and its nearby towns. To him is attributed the publication of the first list of plants of this vicinity.

In an address at the dedication of the Botany Building at Wellesley College on November 4, 1927, Dr. C. Stuart Gager appears to designate Dr. Edward Tuckerman as the first teacher to be appointed to a chair of Botany in any American college (Science N. S. 67: 172). It is fortunate for this herbarium that the appointment of this pre-eminent lichenologist was made by Amherst College. While it is true that the bulk of his original collection of lichens ultimately went elsewhere many of his duplicates remained here. It is especially fortunate for us that we have a very full representation of the local plants gathered by him to furnish a valuable supplement to the work begun by Hitchcock. The fact that he exchanged quite widely undoubtedly accounts for the appearance in the Amherst Herbarium of the plants collected in the southeastern states by A. H. Curtiss with whom Tuckerman carried on an extensive correspondence. Even more interesting, perhaps, is the occurrence of many duplicates from the herbarium of Francis Boott, many bearing his signature in a bold hand. Whether he was responsible for obtaining many sheets of Algae bearing Greville's label is unknown. It is probable that Tuckerman also had exchange relations with such well-known collectors as Beardslee, Bebb, Canby, Chapman, Commons, Flint, Huntington, Garber, Gattinger, Hall, H. N. Patterson, Peters, Ravenel, Reverchon, Porter, and Vasey, for many sheets of specimens gathered by them appear in our collection.

During the period of Tuckerman's professorship at Amherst, George L. Goodale completed his undergraduate course. He later became a professor in the Department of Botany at Harvard University. Perhaps the most interesting specimen of local importance left by him in our herbarium was a sheet of *Saururus cernuus* L. which he collected in Plainville (Hadley, Hampshire County)—a very unusual station for this plant. There are also sheets of plants collected when he visited the region of the St. John River in Maine.

In the latter part of the last century the following collections were obtained by purchase or exchange:

Austin's Musci Appalachiani; Sullivant's Musci Alleghanienses; Sullivant and Lesquereux's Musci Borealis Americanae; Macoun's Canadian Plants; duplicates collected by E. H. and J. Ray in England; and A. Orsini in Italy.

Other collections obtained, probably by gift, were a valuable set of Chinese ferns gathered by the late Rev. Charles Hartwell, for many years a missionary in Foochow; and a large collection of ferns

collected in India by Samuel B. Fairbank, for a long time a missionary in that country. Our set of Chinese ferns was in 1929 augmented by the J. E. Walker collection gathered in the Province of Fukien.

The work carried on by Hitchcock and Tuckerman in our local area received still further enrichment from the activity of the late Professor Henry G. Jesup who, before going to his long service at Dartmouth College, occupied a pastorate in Amherst and was a keen student of nature.

During the first decade of the present century few additions were made to our herbarium and comparatively little systematic work was done by Amherst College in our region. In 1915 the gift of the Addison Brown Herbarium added approximately 25,000 sheets. In addition to those gathered by himself this herbarium includes sheets from the following well-known collectors:

R. M. Austin	California
J. M. Bigelow	Canadian River, Ft. Smith to the Rio Grande
S. B. Buckley	Florida
J. W. Congdon	Rhode Island
W. C. Cusick	Oregon and Washington
H. Eggert	Vicinity of St. Louis
W. W. Eggleston	Vermont
J. Hale	Louisiana
R. M. Harper	Southern states
A. A. Heller	Atlantic states, California, Hawaii
T. J. Howell	Northwestern states
M. E. Jones	Colorado and New Mexico
C. B. Metcalf	New Mexico
P. V. Leroy	Texas
C. Mohr	Alabama
D. T. MacDougal	Arizona
E. Palmer	Southwestern states and Mexico
S. B. and W. F. Parish	California
H. N. Patterson	Colorado
C. G. Pringle	Vermont, Southwestern states, Mexico
H. H. Rusby	New Mexico
J. H. Sandberg	Minnesota
J. K. Small	Southeastern states
P. C. Standley	New Mexico
W. N. Saksdorf	Washington
E. O. Wootton	New Mexico
B. Trask	California

and many others.

Two other gifts of plants since 1915 have been the Herbarium of Professor Levi H. Elwell (RHOD. 3: 228) including about 2000 sheets comprising many local plants and, in addition, specimens from North

Carolina, Florida, Kansas and a few from British Columbia. A valuable collection of Japanese ferns was received from the late Professor Arthur W. Stanford of the Doshisha Theological School.

The cordial coöperation and interest of President Pease has given new impetus to the study of the local flora and he has generously given many sheets of his own collecting in the New England states, the northwestern states, Europe, and Canada.

During the last decade especial attention has been given to making a thorough survey of the flora of the Connecticut River watershed in Massachusetts. We are glad to find rarities because of their value in orienting the possible relationships and origin of our flora but we are firmly convinced that we need to know much more about our common plants which determine, as it were, the physiognomic characteristics of our area. For two summers three collectors have been working in the Swift River Valley which is to be inundated for the Metropolitan Water Supply. We have also done considerable collecting in the valleys of the Westfield and Deerfield Rivers.

The Amherst College Herbarium has thus increased from 12,000 sheets to approximately 70,000 with a corresponding increase of range. A conservative estimate indicates approximately 13,000 sheets from the watershed of the Connecticut River in Massachusetts. The Herbarium is filed in metal cases and is housed in 22 Appleton Hall at Amherst College. The writer extends cordial invitation to fellow botanists and nature students to use our facilities.

22 APPLETON HALL, AMHERST COLLEGE,
Amherst, Massachusetts.

CALLITRICHE STAGNALIS IN EASTERN UNITED STATES

H. K. SVENSON

WHILE going over some material of *Callitriche* at the Gray Herbarium my attention was drawn to a specimen with unusually large leaves and fruit collected by Dr. F. W. Pennell in Waquoit, Massachusetts. The specimen, so clearly distinct from the other local material, was soon recognized by Professor Fernald as *Callitriche stagnalis* Scop., a species of wide distribution in the Old World; extending according to Hegi¹ through Europe (with the exception of the

¹ Ill. Fl. Mittel-Euro. V, 1. 197 (?1928).

extreme north), northern and central Asia, northern Africa and Macronesia. Hegelmeier² states that *C. stagnalis* is not known from the northern parts of Scandinavia, Scotland or Russia, and that outside of Europe there are three centers of distribution, Madeira and Teneriffe, Abyssinia, India and Ceylon.

Waquoit is a village in Falmouth on Cape Cod. A visit to the locality by Professor Fernald and myself was rewarded by finding the species abundant. The plants attain a great length in rapid water and in the Falmouth region the streamer-like growths pushed about by the current are conspicuous for a long distance. In such situations the plants do not usually have flowers or fruit but search in the quiet water of adjacent ditches or dried-out shores will reveal the fruiting plants. These are frequently only a few inches in height. In still water the plants are rather bushy, with prominent rosettes of broadly spatulate floating leaves which are much coarser than those of our other species. Submerged leaves are linear. *C. stagnalis* is resistant to frost and during the past two seasons I have noted it on Long Island in a green and thriving condition even in midwinter.

C. heterophylla is the American species closest in appearance, but from that species *C. stagnalis* is at once distinguished by coarser growth, and by much larger fruits. In *C. stagnalis* the fruits average 1.8 mm. in height and are of equal width. They are normally composed of four loosely united and strongly flattened carpels. The individual carpels average 1.7 mm. high and 0.9 mm. wide, and each has a broad semi-transparent wing on the outer margin. This broad wing is very characteristic of the species. In addition the fruit always remains green. In *C. heterophylla* the fruits are small (averaging 1 mm. high and 0.8 mm. broad) and the plump brown individual carpels are rounded on the outer face with no trace of wings.

Specimens in the herbarium of the Brooklyn Botanic Garden show that *C. stagnalis* has been a member of our flora at least as far back as 1905, and it seems to be a rather abundant plant in the area adjacent to the coast from Massachusetts to Pennsylvania. The following specimens are noted (G, representing the Gray Herbarium; B, the Herbarium of the Brooklyn Botanic Garden).

MASSACHUSETTS: Flowing water, Waquoit, *Pennell* 3381 (1914) (G); forming dense carpets in shallow pools and ditches, Quashnet R., Falmouth, *Fernald & Svenson* 952 (1928) (G); rapidly flowing water,

² Verhand. Bot. Ver. Brandenburg ix, 27 (1867).

Coonamessett River, Falmouth, *Fernald & Svenson* 953 (1928) (G); in sphagnum of ditch in cranberry bog, Coonamessett River, Falmouth, *Fernald & Svenson* 954 (1928) (G).

NEW YORK: Abundant in a flowing brook, Valley Stream, *Svenson* 4451 (April 5, 1931) (B, G); submerged in a small stream, Islip, *Svenson* 4452 (April 5, 1931) (B, G); covering the surface of a small brook, Richmond, *Svenson* 4493 (June 7, 1931) (B, G).

NEW JERSEY: in brook mud, Cherry Hill, *H. Dautun* (July 22, 1905) (B), (June 7 and July 17, 1908) (B), (Sept. 19, 1909) (B); in a flowing brook, in flower and fruit, Preakness, *Svenson* 4478 (May 31, 1931) (B, G).

PENNSYLVANIA: west branch, Indian Run, West Philadelphia, *H. B. Meredith* (May 17, 1923) (G); in a brook, West Philadelphia, *Svenson* 3486 (Nov. 24, 1929) (B, G).

BROOKLYN BOTANIC GARDEN.

CALLITRICHE STAGNALIS ON THE LOWER ST. LAWRENCE.—In the preceding article Dr. Svenson records the occurrence of *Callitriche stagnalis* Scop. in the coastwise region from Cape Cod to southeastern Pennsylvania. Familiar with the large foliage and fruit of the Cape Cod plant, and remembering the dark green color of the plant, as contrasted with the paler color of our commoner species, I have, naturally, watched for *C. stagnalis* elsewhere in Atlantic North America. In September last, while collecting on the always interesting tidal flats of the lower St. Lawrence, in this case on the borders of Anse St. Vallier in County Bellechasse, Quebec, I at once recognized the familiar dark green and broad foliage and the large fruits of *C. stagnalis*. At St. Vallier the *Callitriche*, growing on gravel and mud covered at high tide and exposed at low tide (typical estuarine conditions) forms extensive prostrate mats, heavily fruiting. Its associates are the characteristic plants of the St. Lawrence estuary, such as *Butomus umbellatus* L., *Leersia oryzoides* (L.) Sw. forma *glabra* A. A. Eaton, *Cyperus rivularis* Kunth, *Scirpus Smithii* Gray var. *levisetus* Fassett, *Eriocaulon Parkeri* Robinson, *Tillaea aquatica* L., *Elatine americana* (Pursh) Arn., *Epilobium ecomosum* (Fassett) Fern.,¹ *Gentiana Victorinii* Fern. and a puzzling aggregation of estuarine variations in *Bidens*, *Isoetes* and other genera awaiting study.—M. L. FERNALD.

¹ *EPILOBIUM ecomosum* (Fassett), comb. nov. *E. glandulosum*, var. *ecomosum* Fassett, RHODORA, xxvi. 48 (1924).

When Dr. Fassett described this plant he had only two collections and he separated it from *Epilobium glandulosum* Lehm., var. *adenocaulon* (Haussk.) Fern. merely by its ecomose seeds, itself a very remarkable character in a genus characterized by comose

seeds. We now know *E. ecomosum* from several stations in Quebec, on the tidal shores from Cap Rouge to l'Ile d'Orleans and Anse St. Vallier, ten collections being before me. In addition to the lack of coma the seeds display another extraordinary character, in being heavily covered with approximate rows of whitish hyaline elongate trichome-like papillae; the seeds are also more abruptly rounded at base than in *E. glandulosum* and its var. *adenocaulon*, both typical *Epilobia* with normal coma. In the two latter the seeds are attenuate to the base and minutely pebbled with very low or often obscure papillae. The high and irregularly crest-like rows of trichome-like papillae of *E. ecomosum* are not closely approached in the surfaces of seeds of any other American species known to me. The nearest approach is in *E. franciscanum* Barbey of California.

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STATE OF WASHINGTON PLANTS

During a partial botanical survey, I have collected a few extra sets for sale at the usual prices. Many are from type localities, especial attention having been given this year to the Olympic and Wenatchee Mountains.

Correspondence invited.

J. WILLIAM THOMPSON,
3704 Cheasty Blvd., Seattle, Wash.

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